

HOTSPOTS: BIOLOGICAL DIVERSITY AND CONFLICT

To what extent does international humanitarian law provide legal protections for biological diversity within conflict zones?



University of Oslo
Faculty of Law

Name: Leda Dolan Langberg
Candidate number: 8027
Supervisor: Simon O'Connor
Deadline for submission: 22 December 2010

Number of words: 17,498 (max. 18,000)

22.12.2010

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Acknowledgements

I would like to thank my supervisor, Simon O'Connor for his comments and guidance throughout the process of writing my thesis, his support and encouragement has been a key motivation. Thanks to Professor Cecilia Bailliet and Professor Ole Kristian Fauchald for providing me some useful sources for my research.

Thanks also to my family for their ceaseless support of my education, and to my partner Pål for his unwavering faith in my abilities.

Finally, I am eternally grateful to the all of staff and students involved in the Public International Law programme at the University of Oslo: their enthusiasm, their diverse insights and ultimately their friendship has been a source of great inspiration.

*I think the environment should be put in the category of our national security ...
Defense of our resources is just as important as defense abroad. Otherwise what is
there to defend? ~Robert Redford¹*

¹ Yosemite National Park dedication, 1985, quoted in Time Magazine, September 9, 1985, at:
<http://www.time.com/time/magazine/article/0,9171,959782,00.html#ixzz18aPLwH00>
[accessed 7 Dec 2010].

1 Chapter 1: Introduction

"Biodiversity loss is moving ecological systems ever closer to a tipping point beyond which they will no longer be able to fulfil their vital functions ...Communities everywhere will reap the negative consequences, but the poorest people and the most vulnerable countries will suffer most" United Nations Secretary-General, Ban Ki-moon²

Inspired by the United Nations declaration that this year, 2010, is the International Year for Biological Diversity, this paper seeks to discover how the laws of war³ can be applied to protect important biologically diverse regions from the impacts of armed conflict. To do this it will explore legal protections that can be applied to protect biologically diverse 'hotspots' during armed conflict, including the insights into their effectiveness, by analysing some case examples where armed conflict has impacted the natural environment, or biological diversity more specifically.

The focus of this paper is on protections provided by the laws of war, so the extent to which international environmental treaties may continue to apply during armed conflict will not be discussed in detail. It is noteworthy however, that environmental law treaties may continue to apply during armed conflict⁴, at least to the extent that they are not inconsistent with the applicable laws of armed conflict⁵. It seems likely that reference to military operations is likely to have been omitted from environmental law treaties with good reason, as one scholar notes, directly restricting military operations in at the inception of international environmental treaties like the Convention on Biological Diversity "would have done untold damage to the environmental agenda"⁶.

1.1 Background

Biological diversity (hereinafter "biodiversity") is a collective term that is used to describe

² From an address by the Secretary General on the occasion of the International Day for Biological Diversity, 22 May 2010 (United Nations News Service); related video also available at: <http://www.cbd.int/2010/welcome/> [accessed 7 Dec 2010].

³ Note: for the purposes of this paper the terms "laws of war", "laws of armed conflict" and "international humanitarian law" will be used interchangeably.

⁴ ICRC customary law study, Vol. I, p. 151.

⁵ See in particular *ICRC Guidelines for Military Manuals*, §4 and §5; World Charter for Nature (1982), Principle 20.

⁶ Phoebe N. Okowa (2007), p. 248.

the variety of life on Earth; the Convention on Biological Diversity⁷ defines it as “variability among living organisms from all sources including, inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems”⁸. The vital importance of ecosystems and concern over continued declines in biodiversity prompted the CBD, which entered into force in December 1993. The CBD boasts almost universal participation, with 193 States aiming to reduce the rate of biodiversity loss. This document sets a reduction target (reflected in the Millennium Development Goals⁹) and in its preamble the CBD notes “...that the conservation and sustainable use of biological diversity will strengthen friendly relations among States and contribute to peace for humankind”.

The term biodiversity ‘hotspot’ refers to a region of exceptional biodiversity that is experiencing some serious threat to its existence. The term was coined by UK scientist Norman Myers, whose aim was to identify priority areas for biodiversity conservation.¹⁰ It is possible to define hotspots in slightly different ways, however for the purposes of this paper the focus will be on hotspots as defined by Hanson ... [et al.] who described biodiversity hotspots as regions featuring “exceptional concentrations of endemic species and experiencing exceptional loss of habitat”¹¹.

The hotspots approach initially used in relation to terrestrial ecosystems¹², has also been applied to aquatic areas including open oceans¹³, tropical reefs¹⁴, and estuaries¹⁵. For the purposes of this paper, the focus will be on terrestrial ecosystems so as to highlight protections required in response to land warfare. Whilst certain military actions on land could indeed have consequences for marine and aquatic environments, for the most part military actions in these locales are governed by laws of war more specifically aimed military operations at sea¹⁶.

⁷ Convention on Biological Diversity, Rio de Janeiro, 5 June 1992, hereinafter cited as: “CBD”.

⁸ CBD, Art. 2.

⁹ See in particular Millennium Development Goals, Goal 7.

¹⁰ See Myers, N. (1988); Myers ... [et al.] (2000).

¹¹ Citing: Myers ... [et al.] (2000).

¹² Myers, N. (1988).

¹³ See for example: Worm, Boris, ... [et al.] . (2005).

¹⁴ See for example: Roberts Callum M., ... [et al.] . (2002).

¹⁵ See for example: Attrill, Martin J., ... [et al.] . (1996).

¹⁶ See in particular the San Remo Manual on International Law Applicable to Armed Conflicts at Sea and Geneva Convention II.

Identifying 'hotspots' is but one way to prioritise conservation efforts, it is however, a well respected method and has reportedly attracted the largest sum of funding ever assigned to a single conservation strategy¹⁷ from both international and non-governmental organisations¹⁸. According to Conservation International, globally all biodiversity 'hotspots' cover an area of only 2.3% of the Earth's land surface - but they are home to half of the worlds known plant species, and 42 percent of all terrestrial vertebrate species are found only in these regions¹⁹. The value of these regions for both conservation and anthropocentric reasons is clear, and with only 34 of these regions identified, there is a strong argument in favour of ensuring the protection of these areas at the international level, particularly in hotspots that might be impacted by armed conflicts.

Areas with exceptional concentrations of endemic species is of particular relevance to this paper because these areas contain many species found only in that region and therefore they are most susceptible to human disturbance, including impacts of armed conflict. Accordingly, endemism has been described as a "measure of irreplaceability ... Since we cannot conserve a species that is endemic to a given area anywhere except in that area, the area is wholly irreplaceable at a global scale."²⁰ Further, since many hotspots also lie in centres of political volatility the impact armed conflict can be a critical aspect of their long-term conservation²¹.

1.1.1 Armed Conflict – an Environmental Threat

Military hostilities have long constituted a threat to the natural environment, and to the civilians who live in it: both directly _ when it is targeted during hostilities _ and incidentally where damage occurs as a consequence of attacks against military objectives²². One of the (largely) incidental consequences of armed conflict is its impact on the biological diversity in a given conflict region, although it is foreseeable that as the value of biological resources is increasingly recognised²³, there will be an accompanying increase in risk that biodiversity is more directly targeted in the conduct of hostilities.

¹⁷ Myers, Norman (2003), p. 917.

¹⁸ Myers cites the MacArthur and Moore Foundations, the World Bank, the Global Environment Facility, and Conservation International.

¹⁹ Conservation International "Biodiversity Hotspots" website, at: <http://www.biodiversityhotspots.org/>

²⁰ Hotspots Revisited (2005) p. 22.

²¹ Hanson ... [et al.] . (2009), citing: Mittermeier ... [et al.] . (2004).

²² Roscini, Marco (2009).

²³ See for example: CBD, Art. 15; the Bonn Guidelines (2002); and CBD related instrument under consideration at the 2010 COP 10: the International Regime on Access and Benefit-sharing, at: <http://www.cbd.int/abs/ir/regime.shtml#mandate>

A publication from the United Nations Environment Programme²⁴ outlines that whilst there are numerous examples of natural resources being used as weapon of war²⁵, the majority of environmental damage during times of armed conflict is collateral, or related to the preparation and execution phases of wars and to the coping strategies of local populations. Impacts on biodiversity from armed conflict may be both direct and indirect: deforestation for illegal crop cultivation, fumigation or pesticide use related to military operations, oil spills, attacks on natural resources, institutional impacts²⁶ and impacts on displaced people and refugees may all have significant consequences for natural resources and biodiversity in or even adjacent to conflict zones. The combined result may ultimately be a contribution global biodiversity losses, and whilst the impact from military operations may be relatively small (e.g. if compared to the impacts from deforestation) where military operations occur within biodiversity hotspots, impacts are conceivable much more significant due to the importance of those already threatened regions.

1.1.2 Focussing on the Environment, Ecosystems and Biological Diversity

In both national and international contexts, it seems apparent that there has been increasing focus on environmental considerations during armed conflict. This increased focus and the accompanying legal developments have occurred parallel to enormous advances in scientific understandings of the natural world, particularly in relation to eco-systems and biological diversity. According to Austin and Bruch²⁷ there are two factors that have driven the focus towards environmental considerations in wartime:

- 1) The rise of environmentalism
- 2) Advances in military technology

This shifting focus is evident in international legal instruments and jurisprudence as well as in State policy and practice, both of which will be explored below in Chapter 2. These factors both play significant roles: environmentalism drives a desire to protect and conserve the natural environment while advances in military technology have the ability to both reduce and increase impacts on the environment, including consequences for biodiversity within conflict zones.

There is room to argue that connected to the ‘rise of environmentalism’ is enormous

²⁴ Hereinafter cited as: UNEP

²⁵ UNEP Peacebuilding Booklet (2009), p. 15.

²⁶ *Ibid*, pp. 15-17.

²⁷ (2000), p. 17.

advancement in scientific understandings, particularly regarding ecosystem biology and the importance of biological diversity. Here, it is useful to recall that the CBD is almost universally ratified²⁸ perhaps indicating a deepening respect on the part of the international community for biodiverse regions owing both to their intrinsic value, and increasingly for the value they hold for humanity, directly through the provision of ecosystem services to their inhabitants and nearby communities, and more broadly for related ecological, genetic, social, economic, scientific, educational, cultural, recreational and aesthetic reasons.²⁹

1.1.3 Armed Conflict in Biodiversity 'Hotspots'

Beyond the extensive conservation or environmental arguments favour of preserving biodiversity 'hotspots', the financial value of such regions and their other potential benefit to communities and States or even to humanity at large might mean preservation of biodiversity hotspots has both tangible and intrinsic benefits to humanity at large³⁰. That said (as indicated above) many hotspots lie at the centre of political volatility, and further "[m]ost of the world's bloodiest wars are unleashed in the [biodiversity] hotspots ... often driven by resource conflicts."³¹ Conservation International describes hotspots as "notable cent[re]s of violent conflict" and refers to areas plagued by recent violence, citing the examples of: areas in Mesoamerica, the Caribbean, the Tropical Andes, the Guinean Forests of West Africa, the Eastern Afromontane rifts, the Horn of Africa, the Caucasus, the Irano-Anatolian region, the Mountains of Central Asia, Indo-Burma, Sundaland, Wallacea, the southern Philippines, and the East Melanesian Islands³². Other examples include: "Somalia, Afghanistan, Palestine, northern Iraq, Timor, Haiti [all of which] lie in hotspots harbouring exceptional numbers of plant species found nowhere else"³³.

The above descriptions are echoed in a recent finding that more than 80% of the major armed conflicts between 1950 and 2000 took place within areas identified as biodiversity

²⁸ See CBD website, at: <http://www.cbd.int/convention/parties/list/>

²⁹ See in particular: CBD, preamble: "conscious of ... the ecological, genetic, social, economic, scientific, educational, cultural, recreational and aesthetic values of biological diversity and its components"; "Conscious also of the importance of biological diversity for evolution and for maintaining life sustaining systems of the biosphere..."

³⁰ For example see statement by Achim Steiner (UN Under Secretary General and UNEP Executive Director): "Destroying and damaging the natural assets and ecological infrastructure of a country or community should be an issue of highest humanitarian concern. The loss of freshwaters and grazing lands to croplands and forests not only leads to direct suffering, but also undermines the survival, the livelihoods and the opportunities for people to recover during and after a conflict" In: UNEP Press Release, Nairobi, 6 November 2009, see website: <http://www.unep.org/Documents/Multilingual/Default.Print.asp?DocumentID=602&ArticleID=6362&l=en>

³¹ Preface by Peter A. Seligmann, Chairman of the Board and CEO of Conservation International, In: *Hotspots revisited* (2004), p. 11.

³² Conservation International "Biodiversity Hotspots" website, at: http://www.biodiversityhotspots.org/xp/Hotspots/hotspotsScience/hotspots_in_peril/Pages/default.aspx

³³ Peter A. Seligmann, In: *Hotspots revisited* (2004), p. 11.

hotspots³⁴. The paper considered both international and non-international armed conflicts, specifically including only the conflicts that resulted in more than 1000 casualties. This definition of armed conflict does not necessarily mean all situations included in the paper would amount to armed conflict under IHL, although it seems apparent that at least a significant proportion of situations considered are likely to have satisfied the IHL definitions, as in a number of instances numerous State parties were involved, and situations involving over 1000 casualties amount to more than “internal disturbances and tensions”; thereby satisfying the accepted definition of armed conflict, as expressed by the International Criminal Tribunal for the former Yugoslavia³⁵:

... an armed conflict exists whenever there is a resort to armed force between States or protracted armed violence between governmental authorities and organized armed groups or between such groups within a State. International humanitarian law applies from the initiation of such armed conflicts and extends beyond the cessation of hostilities until a general conclusion of peace is reached; or, in the case of internal conflicts, a peaceful settlement is achieved.³⁶

The Conservation Biology paper concluded that “[a]rmed conflicts were highly prevalent and consistent in the world’s most biologically important regions, underscoring the urgency of understanding the effects of warfare in the context of biodiversity conservation”³⁷. The conclusion in that paper was aimed at conservation biologists, so while biologists and ecologists work to discover the overall impacts of warfare in the context of biodiversity conservation, legal scholars ought to seek out understandings of which legal protections might be employed to protect biodiversity hotspots, particularly in light of the prevalence of armed conflict within them.

1.2 Aims & Methods

Focussing on International Humanitarian Law (“IHL”), this paper will initially identify legal sources of biodiversity protection that may be applicable during international armed conflicts (IACs) and during non-international armed conflicts (NIACs). It will give an overview of the applicable international instruments and then go on to identify a number of examples of jurisprudence and State practice that relate to the protection of biodiversity during armed conflict.

³⁴ Hanson ... [et al.] (2009).

³⁵ Hereinafter cited as: “ICTY”

³⁶ ICTY, *The Prosecutor v. Duško Tadić* (Appeals Chamber Decision), at para 70.

³⁷ Hanson ... [et al.] (2009), p. 583

Chapter 2 will identify relevant sources of law, including a brief discussion of certain methods of war that are prohibited (regardless of their environmental impact) pursuant to the Hague Conventions of 1899 and 1907. Chapter 2 will also identify the body of humanitarian law sources under the Geneva Conventions and their Additional Protocols I and II) whilst Chapter 3 will go on to look State practice as well as a some other sources, as identified in a paper by Yoram Dinstein³⁸ including the ENMOD Convention, The Rome Statute of the International Criminal Court; Protocol II, Annexed to the Weapons Convention and the Chemical Weapons Convention, along with some examples of international jurisprudence in the field that may be applicable in the context of biodiversity protection.

Chapter 4 will explore the effectiveness of IHL protections as they currently are, or as they could be applied, by briefly analysing a collection of case examples (including both IACs and NIACs) conflict scenarios that have impacted the natural environment and biological diversity more specifically.

³⁸ Dinstein (2001) p. 525.

2 Chapter 2: Legal sources of biodiversity protection during armed conflict

“...the environment is not an abstraction but represents the living space, the quality of life and the very health of human beings, including generations unborn.”³⁹

The discussion below reveals that there are a number of IHL sources applicable to the protection of the natural environment generally, which arguably can be interpreted to include protection of biodiversity hotspots more specifically (as a part of the natural environment). This chapter will give an overview of applicable treaty law, along with key rules and principles of the international law of armed conflict, which arguably make up part of the corpus of customary international law as specified under the Rome Statute⁴⁰. Some examples of relevant international jurisprudence will then be discussed. The applicability of International Environment Law will not be discussed, suffice to mention here that there are arguably emerging customary principles in this field that may provide environmental protections beyond those offered under IHL.

2.1 IHL protection for the natural environment – a field in its infancy

IHL treaties did not directly address protection of the natural environment until the adoption of Additional Protocol I to the Geneva Conventions in 1977⁴¹. So, whilst there have been longstanding attempts at legal regulation of the humanitarian consequences of war, attempts at legal regulation of environmental consequences of war are comparatively recent. As a result there is little specific reference to environmental protection in existing IHL treaties, so most useful protections are found in norms designed to regulate other areas including means and methods of warfare, or protections designed to protect civilian persons and objects. Thus, there is little harmony in the existing body of IHL applicable to environmental protection and “... no homogenous body of law that protects the ecosystem in time of armed conflict.”⁴² The UNEP Report concludes, there are “...significant gaps and difficulties [that] remain to be reconciled if the protection of the environment is to be

³⁹ ICJ, *Nuclear Weapons Case* (1996), pp. 241 -242, para. 29.

⁴⁰ Rome Statute, Art. 21 (1) (b).

⁴¹ UNEP Report (2009), p. 14.

⁴² Roscini (2009), p.3.

enhanced within the IHL framework.”⁴³ A limited number of rules exist that specifically target environmental warfare⁴⁴, however, in general protections for the natural environment come from indirect sources of IHL, having been derived from provisions conceived for other purposes or based upon underlying principles of customary international law regulating the conduct of hostilities⁴⁵. Protection of the Natural Environment during armed conflict has been identified by the ICRC as one of four key areas where IHL should be strengthened.⁴⁶ Building on this the argument herein is that strengthening of IHL in this regard ought to incorporate protection of biodiversity hotspots in light of their importance in their own right and to communities and to humanity in general and in light of existing threats to their existence.

The direct protections provided under IHL reflect a growing acknowledgement of the intrinsic value of the natural environment, deserving of protection in its own right. The indirect protections come out of law aimed at preserving nature due to its consequential value for the civilian population, both for economic as well as social and cultural reasons.

In the absence any body of law to draw upon, scholars⁴⁷ have identified elements of the existing legal infrastructure to protect the natural environment. This chapter seeks to join this discourse and outline IHL sources that may provide protections for biodiversity hotspots in particular. There is no direct reference to biodiversity in any of the documents that will be discussed, so protections discussed are derived from more general provisions. Following identification of the relevant IHL sources, the following chapters will consider examples of state practice and assess effectiveness through consideration of real conflict scenarios, and address the question of whether or not existing protections are sufficient in light of increased understandings of the value of biodiversity, and the fact that so many armed conflicts appear to be concentrated in biodiversity hotspots.

2.2 Hague Law

Customary IHL rules relating to the conduct of hostilities are commonly referred to as ‘Hague Law’. Hague Convention IV⁴⁸ recognised that “[t]he right of belligerents to adopt

⁴³ *UNEP Report* (2009), p. 28.

⁴⁴ Note: see discussion below covering the ENMOD Convention and Additional Protocol I to the Geneva Conventions.

⁴⁵ Roscini (2009), p.3.

⁴⁶ Interview with ICRC president, Jakob Kellenberger, available online at: <http://www.icrc.org/eng/resources/documents/interview/ihl-development-interview-210910.htm>

⁴⁷ see for example: Dinstien, Yorum (2001); Okowa (2007); Fleck (1996).

⁴⁸ Hague Convention respecting the Laws and Customs of War on Land, of 18 October 1907, with the Regulations annexed thereto.

means of injuring the enemy is not unlimited”⁴⁹. Thus, these principles – established by States in an effort to alleviate “...as much as possible the calamities of war” – sought to place specific limitations on the means and methods of warfare. Whilst such limitations may have been designed to benefit combatants of the respective contracting States, they also hold the promise of indirect benefits for others, including other species within conflict zones. The UNEP Report identifies five categories of rules that may be applicable to protection of the natural environment during armed conflict. The first of these is limits or prohibitions of certain weapons and methods of warfare: as Roscini explains, the rules directly protecting the environment during armed conflict often have a very limited practical application due to the high thresholds they establish or specific nature of weapons they may target ⁵⁰ - thus, sometimes a more effective role is played by the indirectly applicable laws of war.

In limited circumstances it is possible to derive protections for biodiversity hotspots from the Hague Conventions, and where this can be achieved significant applications may result due to the customary nature of those Conventions, which are binding even on states who were not formally parties to them⁵¹. Placing a general limit on the right of belligerents to adopt means of injuring the enemy under Article 22 of the Fourth Hague Convention (see above) has been described as the most significant provision in the Hague Conventions, because it gives rise to an implied *precautionary imperative* that can be required of belligerents in the absence of specific provisions.⁵²

2.2.1 Cultural Property

The existing definition of “cultural property” present in the 1954 Hague Convention for the Protection of Cultural Property in the Event of Armed Conflict and its two Protocols (1954 and 1999), does not include specific reference to the natural environment. That said, in certain circumstances biodiversity hotspots or specific areas therein may satisfy the Convention definition established under Article I. The definition covers movable or

⁴⁹ The Hague Regulations Respecting the Laws and Customs of War on Land, annexed to the 1907 Hague Convention IV, Art. 22; see also: Martens Clause, contained in the Preamble of the 1907 Hague Convention IV, this clause has historically extended the international laws of war to include principles of the “laws of humanity and the dictates of public conscience”.

⁵⁰ Roscini (2009), p.15.

⁵¹ See in particular, *Legal Consequences of the Construction of a Wall in the Occupied Palestinian Territory*, Advisory Opinion, I.C.J. Reports 2004, p. 172, para. 89 ; the judgment of the Nuremberg International Military Tribunal (1946) (reprinted in AJIL, Vol. 41, 1947, pp. 248-249), which stated that rules expressed in the Convention were by 1939 “...recognized by all civilized nations and were regarded as being declaratory of the laws and customs of war”.

⁵² UNEP Report (2009), p. 14, citing Lijnzaad, L. and Tanja, G. *Protection of the environment in times of armed conflict: The Iraq-Kuwait War*. In: Netherlands International Law Review. Vol. 40 (1993), p. 180.

immovable property of great importance to the cultural heritage of every people. The Convention definition provides examples “...such as monuments of architecture, art or history ... archaeological sites; groups of buildings ... of historical or artistic interest; works of art; manuscripts, books and other objects of artistic, historical or archaeological interest; as well as scientific collections and important collections of books or archives or of reproductions of the property defined above”. Additionally, Part (c) of the definition refers to “centres containing a large amount of cultural property as defined in subparagraphs (a) and (b), to be known as “centres containing monuments”.

Adopted in 1999, the Second Protocol to the Convention seeks to rectify the largely ineffective cultural property protections provided under the 1954 Convention by extending the protection to NIACs, and in addition establishing a new system that sees cultural property of the greatest importance become the subject of “enhanced protection”. To receive the enhanced protection a decision taken by an intergovernmental committee established under the new Protocol⁵³ to grant specific cultural property entry onto the ‘List of Cultural Property Under Enhanced Protection’. Areas granted enhanced protection enjoy clearly defined precautionary measures that must be taken, and better defined violations in relation to punishment by criminal sanctions. The UNEP Report notes that this provision may be of particular “relevance to the current 176 natural sites on the (UNESCO) World Heritage List, especially those classified as ‘in danger’ ... provided that they fall within the definition of cultural property under Article 1 of the Hague Convention.”⁵⁴

2.2.2 Martens Clause

Owing to IHL’s dependence on the widespread consensus of States (through ratification of treaty instruments or development of international customary rules), “there can be a significant delay between the formation of moral standards and the development of positive legal norms reflecting those moral standards.”⁵⁵ Protection for biodiversity may indeed be an example of this, because although we recognise the significance and value of biodiverse regions, and even acknowledge their importance for the very health of humanity⁵⁶, the international community is yet to develop positive legal norms to protect

⁵³ The Committee for the Protection of Cultural Property in the Event of Armed Conflict.

⁵⁴ UNEP Report, p. 18, citing: <http://whc.unesco.org/en/danger/>; Art. 11(4) of the UNESCO World Heritage Convention. UNEP Report notes that among the 15 natural sites currently classified as in danger on the World Heritage List, approximately 10 are located in countries that have experienced open or latent armed conflict over the past decades (for instance, in the Democratic Republic of Congo or Côte d’Ivoire).

⁵⁵ Ticehurst (1997).

⁵⁶ See: CBD, preamble.

these regions during armed conflict. As Ticehurst notes, positive law can be “inefficacious” in its protection from the impacts of armed conflict, so “[i]t is therefore important to recognize the existence of a moral code as an element of the laws of armed conflict in addition to the positive legal code”⁵⁷ – at least until such time as a positive legal norm can be established to reflect moral standard. The Martens Clause provides this “moral code” that can be employed to fill the gaps in existing positive legal norms. It certainly should not replace any strengthening of codified law because any moral code or consideration of the dictates of humanity is fraught with interpretative hurdles. Such a code is nevertheless a suitable stopgap and of particular relevance to biodiversity hotspots where prevention of damage during armed conflict is of far greater importance than prosecution after irreversible biodiversity losses have been incurred.

The Martens Clause was first adopted at the 1899 Hague Conference and reiterated in the 1907 Hague Convention IV as well as Additional Protocol I⁵⁸ (and in a shortened form within the preamble to Additional Protocol II) to the Geneva Conventions. In adopting the clause, the aim of the high contracting parties was to make provision for cases outside of the specific international instruments, declaring that “...in cases not included in the Regulations adopted by them, the inhabitants and the belligerents remain under the protection and the rule of the principles of the law of nations, as they result from the usages established among civilized peoples, from the laws of humanity, and the dictates of the public conscience.”⁵⁹ Thus, the Martens Clause extends to scope of applicable norms governing conduct during armed conflict, and provides potential protections for the natural environment where treaty or customary law is silent.

Legal interpretations of the Martens Clause have been widely disparate,⁶⁰ not least interpreting if and how it could possibly afford protection for the natural environment. The International Law Commission (ILC) considers that the Martens Clause “provides that even in cases not covered by specific international agreements, civilians and combatants remain under the protection and authority of the principles of international law derived from established custom, from the principles of humanity and from the dictates of public

⁵⁷ Ticehurst (1997).

⁵⁸ Art. 1(2).

⁵⁹ Hague Convention IV (1907), Preamble; reiterated in the *ICRC Guidelines for Military Manuals*, Guideline 7.

⁶⁰ Ticehurst (1997), p. 125.

conscience.”⁶¹ If we accept the ILC interpretation, there is some room for protection of biodiversity, at least to the extent that it is required for the protection of civilians.

2.2.3 Property Clauses

In addition to Cultural Property protections and the Martens Clause, the Hague Conventions also outline certain protections for property more generally, although in light of the developments in biotechnology and accompanying intellectual property laws, concepts of property at the international level have undergone considerable transformation, and arguably now include biological and genetic resources of a region⁶². Under the Hague Convention IV (applicable in all international armed conflicts) it is prohibited ...[t]o destroy or seize the enemy's property, unless such destruction or seizure be imperatively demanded by the necessities of war.”⁶³ Dinstein explains there were serious environmental consequences when this element of the Convention was violated (amongst numerous other rules of IHL) in February 1991. This example involved Iraq – who, in the absence of any military rationale - intentionally caused massive oil spills into the Persian Gulf and set fire to more than 600 Kuwaiti oil wells as the defeated army was being evacuated.⁶⁴ In addition, property is protected under the fourth Geneva Convention, and as such this argument will be expanded below. After the Gulf War, the U.N. Security Council established the responsibility of Iraq for the damage done, inter alia, to the natural environment in Kuwait, in violation of international law and in particular the UN Charter prohibition against aggression⁶⁵. Art 91 of Additional Protocol I explains the general obligation to pay compensation for damage done in violation of international humanitarian law, and according to one commentator: “[t]he applicability of this rule to unlawful damage done to the natural environment in the course of military operations is beyond doubt.”⁶⁶

⁶¹ United Nations Report of the International Law Commission on the Work of its Forty-sixth Session, 2 May - 22 July 1994, GAOR A/49/10, p. 317.

⁶² see CBD, preamble: “*Conscious* of the intrinsic value of biological diversity and of the ecological, genetic, social, economic, scientific, educational, cultural, recreational and aesthetic values of biological diversity and its components ... *Reaffirming* that States have sovereign rights over their own biological resources;

⁶³ The Hague Regulations Respecting the Laws and Customs of War on Land, annexed to the 1907 Hague Convention IV, Art. 23. Such protections are reiterated and elaborated in the Geneva Conventions, see

⁶⁴ Dinstein, Yoram (2001), pp. 543-544.

⁶⁵ Charter of the United Nations, Art. 2.

⁶⁶ Gasser, Hans-Peter (1996), p. 526.

2.2.4 Other International Instruments

Within the Hague Conventions, the high contracting parties were directed to “...abstain from the use of projectiles the object of which is the diffusion of asphyxiating or deleterious gases”⁶⁷. This specific restriction on the means and methods of warfare was elaborated further in documents supplementary to the Hague Conventions, including: the Geneva Protocol to the Hague Convention⁶⁸ (generally regarded as an addition to the Hague Convention); the Biological Weapons Convention of 1972 and the Chemical Weapons Convention of 1993, and the 1980 Conventional Weapons Convention with its Protocol II on mines, boobytraps, and other devices, and Protocol III on incendiary weapons which poses limits the use of particular weapons, prohibits making forests and plant cover objects of attack except when used for military purposes.”⁶⁹

The above described instruments are not discussed in detail here, suffice to say that all of these conventions provide indirect protection for biodiverse areas, because once again a limitation on means and methods of warfare no doubt benefits species within conflict zones in addition to the humans it aims to protect.

2.3 Geneva Law

The Geneva Conventions⁷⁰ and its Additional Protocols I and II collectively set a legal benchmark for protections available to certain categories of person during armed conflict. There is no specific reference to protection of the natural environment or biological resources under the four Geneva Conventions, however specific reference can be found in Additional Protocol I⁷¹ that will be discussed below. In addition to these specific provisions, the established general principles and customary rules of IHL reflected in the Geneva Conventions (and to some extent in their additional protocols) are potentially applicable to protecting biodiversity hotspots during armed conflict. In addition, Roscini notes that there are a number of states who maintain that the two environmental provisions

⁶⁷ See: Protocol for the Prohibition of the Use in War of Asphyxiating Poisonous or Other Gases, and of Bacteriological Methods of Warfare (1925).

⁶⁸ Protocol to the Hague Convention, for the Prohibition of the Use in War of Asphyxiating, Poisonous or Other Gases, and of Bacteriological Methods of Warfare, signed on June 17, 1925 and entering into force on February 8, 1928.

⁶⁹ Burger, James A. (1996), p. 339, citing: Convention on Prohibition or restrictions on the Use of Certain Weapons Which May be Deemed to Be Excessively Injurious or to Have Indiscriminate Effect, 19 LLM 1525 (1980).

⁷⁰ See in particular: Geneva Convention relative to the Protection of Civilian Persons in Time of War, of 12 August 1949;

⁷¹ Protocol Additional to the Geneva Conventions of 1949 relating to the Protection of Victims of International Armed Conflicts (Protocol I), of 1977, Art. 35(3); Art. 55(1),(2).

from Additional Protocol I specifically are a reflection of customary international law⁷². These principles and rules will be discussed further below⁷³.

2.3.1 Article 35(3) and 55 of Additional Protocol I

In the aftermath of the Second Indochina War, Additional Protocol I to the Geneva Conventions was adopted. This period is ostensibly marked as one of increasing environmental awareness, and the environmental provisions included in Additional Protocol I were no doubt influenced both by this fact and by the impacts apparent on the natural environment in Vietnam as a result of certain means and methods of warfare employed during the Second Indochina War⁷⁴. Thus we see inclusion of a number of specific protections for the natural environment in Additional Protocol I:

Specifically, Article 35 (3) establishes that “It is prohibited to employ methods or means of warfare which are intended, or may be expected, to cause widespread, long-term, and severe damage to the natural environment”. Weinstein explains that by criminalising intentional or expected environmental destruction with the legal standard of a reasonable person, she claims that Article 35 “...considers protection of the environment beyond humanitarian effects – representing a departure from traditional humanitarian law.”⁷⁵

In addition a more generic, precautionary type of protection is provided pursuant to Article 55 of Additional Protocol I provides that:

1. “Care shall be taken in warfare to protect the natural environment against widespread, long-term and severe damage. This protection includes a prohibition of the use of methods or means of warfare which are intended or may be expected to cause such damage to the natural environment and thereby prejudice the health or survival of the population”; and
2. Attacks against the natural environment by way of reprisals are prohibited.

The use of the phrase, “Care shall be taken” is illustrative of the obligation that States have to take all feasible precautions to avoid (or in any event minimise) damage to civilian

⁷² Roscini (2009), citing: ICRC customary law study, Vol. I, p. 156.

⁷³ See below: 2.4 Customary International Humanitarian Law

⁷⁴ e.g. defoliation and deforestation techniques employed by the USA, see also Westing, Arthur H., *Ecological Consequences of the Second Indochina War* (1976). In: Stockholm International Peace Research Institute, *SIPRI Yearbook* (1976), Stockholm: Almqvist & Wiksell International, pp. 12-50.

⁷⁵ Weinstein (2004-2005), 702.

objects, including the natural environment⁷⁶ (a requirement supported by military manuals and official statements⁷⁷). In 1995, the ICRC applied this principle in relation to water resources, calling on parties to “take all feasible precautions to avoid, in their military operations, all acts liable to destroy or damage water sources”⁷⁸.

The phrase is akin to common law concepts of a duty of care, which Hulme argues that “...an obligation of taking ‘care’ appears to be at odds with the absolute language generally adopted for the laws of war. The obligation lacks the element of compulsion necessary to found criminal liability, and as a result the provision may be interpreted to incur only the civil liability of states for its breach. If this were the correct interpretation, states would be liable to pay compensation under Article 91 of Protocol I”⁷⁹.

The language employed in Additional Protocol I, “widespread, long-term and severe damage” is, as Roscini points out, also used in numerous other instruments, including:

- The Convention on Prohibitions or Restrictions on the Use of Certain Conventional Weapons Which May be Deemed to be Excessively Injurious or to Have Indiscriminate Effects;⁸⁰
- The Rome Statute establishing the International Criminal Court;⁸¹
- UN Transitional Administration in East Timor (UNTAET);⁸²
- Statute of the Iraqi High Tribunal⁸³.

In addition, this element of Additional Protocol I was also acknowledged as applicable to United Nations Forces, who are “...prohibited from employing methods of warfare ... which are intended, or may be expected to cause, widespread, long-term and severe damage to the natural environment.”⁸⁴

⁷⁶ ICRC customary law study, Rule 44.

⁷⁷ *Ibid*, citing: e.g., United States, *Naval Handbook* (*ibid.*, § 11); the statements of Argentina (*ibid.*, § 29) and Canada (*ibid.*, §§ 36 and 38); see also Report of an expert meeting on the protection of the environment in time of armed conflict.

⁷⁸ ICRC customary law study, Rule 44, citing: e.g., United States, *Naval Handbook* (*ibid.*, § 11); the statements of Argentina (*ibid.*, § 29) and Canada (*ibid.*, §§ 36 and 38); see also Report of an expert meeting on the protection of the environment in time of armed conflict (*ibid.*, § 60).

⁷⁹ Hulme (2004), pp.80-81.

⁸⁰ (1980), preamble.

⁸¹ Rome Statute, Art. 8 (2) (b) (iv).

⁸² (2000), Section 6.1 (b) (iv) of Regulation No. 2000/15 establishing the East Timor Special Panels

⁸³ (2003), Art. 13 (b) (5).

⁸⁴ United Nations Secretary-General’s Bulletin on the Observance by UN Forces of International Humanitarian Law (1999), ST/SGB/1999/13, Section 6.3.

Weinstein notes that Article 55 “...establishes that the environment is a protected object and recogni[s]es the link between the environment and human survival.”⁸⁵

Whilst these two provisions do represent a significant development in IHL with regard to the natural environment, they nonetheless are limited by the high threshold established in the use of a cumulative (widespread, long-term *and* severe) definition of damage. The protection is also restricted as a result of the broad ambit for discretion during military operations in limiting the prohibition to “intended” and “expected” damage. One commentator notes that this makes articles 35(3) and 55 “...of marginal relevance as effective constraints in most conflicts.”⁸⁶

Arguably, if we consider the Article 35 and 55 protections in the context of biodiversity hotspots specifically, it appears that these provisions obtain greater relevance: in short, specifically looking at impacts on biodiversity hotspots is more likely to satisfy the “widespread, long-term, and severe damage” requirement due to the nature of these special zones. In biodiversity hotspots it may be possible to quantify loss of species, and where conflict results in significant population losses or extinctions of endemic species, then the requirements are arguably satisfied in the sense that:

- (a) the species was endemic to the hotspot, so it has a widespread (global) impact on the world-wide population of that given species and potential impacts on the ecosystem it contributes to;
- (b) the impact is long-term, in the sense that any extinction is permanent, and significant depletions in population can take generations⁸⁷ for a species to recover from (decades in the case of many species); and
- (c) the damage is severe, in the sense that species loss in the hotspot relates to endemic species; so significant population depletions or extinctions across a number of species could be very severe for a given ecosystem.

As discussed above, in addition to specific protections under Articles 35 and 55, the UNEP Report identifies a number of other categories of rules that may indirectly protect the environment during armed conflict, including: (1) Limits or prohibition of certain weapons and methods of warfare and (2) Protections for cultural property (both discussed above under Hague Law); along with: (3) Protections for civilian objects and property; (4) Rules

⁸⁵ Weinstein (2004-2005), p. 702.

⁸⁶ Okowa (2007), p. 250.

⁸⁷ The ICRC customary law study (see Rule 45, notes on Interpretation) highlights that the phrase “long-term” was understood by the adopting States to mean decades.

concerning installations containing dangerous forces and (5) Limitations on certain specifically defined areas (the latter three of these will be discussed in turn below).

2.3.2 Civilian Objects & Property

Whilst property has long included the natural resources of a State, and indeed many wars have been fought over access to natural resources⁸⁸, the recognition of the value of biological and genetic resources has occurred comparably recently. The following passage from the preamble of the CBD, a treaty that enjoys almost universal State participation, is illustrative of this evolution in concepts of property:

Conscious of the intrinsic value of biological diversity and of the ecological, genetic, social, economic, scientific, educational, cultural, recreational and aesthetic values of biological diversity and its components,

Conscious also of the importance of biological diversity for evolution and for maintaining life sustaining systems of the biosphere, -

Affirming that the conservation of biological diversity is a common concern of humankind,

Reaffirming that States have sovereign rights over their own biological resources

Thus, it should be possible to derive protection for biodiversity hotspots by recognising that the unique biological resources within these 34 identified regions are in fact key biological resources for the States concerned, and as a consequence should attract protection under IHL. It therefore follows that any wanton destruction or seizure of these biodiversity hotspots, would be contrary to the laws of war proclaimed by Hague Convention IV, except where demanded by the necessities of war.

2.3.3 Installations Containing Dangerous Forces

Protection of industrial installations containing dangerous forces is provided under Article 56 of Additional Protocol I to the Geneva Conventions, which prohibits attacks against works and installations that contain dangerous forces.

Specifically it applies to dams, dykes and nuclear electrical generating stations, but as the UNEP Report notes, does not specifically address oil fields or petrochemical plants. Article 15 of Additional Protocol II extends the prohibition on targeting of dams, dykes and nuclear electrical generating stations to NIACs too.

⁸⁸ Peter A. Seligmann, , In: *Hotspots revisited* (2004), p. 11.

2.3.4 Other Specifically Defined Areas

Occupied territories, neutral territories and formally identified demilitarized zones may also provide protections for biodiversity hotspots. In addition it should also be noted that Antarctica and outer space are also specifically protected from warfare and its impacts by relevant international treaty instruments⁸⁹.

Protection for occupied territories in international armed conflicts can be found in the both the Hague Conventions⁹⁰ and in the fourth Geneva Convention⁹¹. Specifically, whilst the use of occupied property is allowed, destruction of property individually or collectively owned by inhabitants or the occupied territory is prohibited except in circumstances of military necessity. Thus, in the context of biodiversity hotspots, whilst use of these areas is allowed, it must not amount to destruction unless militarily necessary. Even in cases where destruction could be justified by military necessity, other protections may be available to prevent or mitigate the destruction, in particular the general principle of proportionality (however it can amount to destruction where military necessity demands, but it would need to be in line with the established IHL principle of proportionality). Arguably any unsustainable use of a biodiversity hotspot would in most cases amount to destruction, and certainly any loss of species as a result of military activities would amount to destruction in the biodiversity context. As Bruch states, in the context of NIACs “...there are no explicit norms and little state practice imposing civil liability on belligerents for violations of the international law of war.”⁹² This is perhaps an area that needs redress in light of the role that valuable natural resources have playing in fuelling conflicts.⁹³ Although there are no specific case examples to date, as biological and genetic resources obtain higher values and are more readily sold, there is potential for these resources to be threatened as they too become a source of revenue for exploitation to finance armed conflict.

⁸⁹ Namely, Antarctic Treaty (1959), Art. I; Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies (1967), Art. IV.

⁹⁰ See in particular, 1907 Hague Convention IV, Art. 55.

⁹¹ See in particular, Art. 53.

⁹² Bruch (2001), p. 799.

⁹³ United Nations Environment Program (UNEP). *From Conflict to Peacebuilding: The Role of Natural Resources and the Environment*. February 2009. http://www.unep.org/publications/search/pub_details_s.asp?ID=3998 [1 October 2010], p. 11: “In the last twenty years, at least eighteen civil wars have been fuelled by natural resources ... Diamonds, timber, minerals and cocoa have been exploited by armed groups from Liberia and Sierra Leone ... Angola... and Cambodia ... Indeed, the existence of easily captured and exploited natural resources not only makes insurgency economically feasible (and, therefore, war more likely); it may also alter the dynamics of conflict itself by encouraging combatants to direct their activities towards securing the assets that enable them to continue to fight.”

Protection for neutral territories has its origins in customary law, although it is reflected in the relevant IHL instruments⁹⁴. The key principle is that obligations relating to States not a party to an armed conflict (and in relation to territory beyond the limits of national jurisdiction) are not affected by the existence of the armed conflict, and such relations continue to be governed by international law applicable in times of peace (at least to the extent that it is not inconsistent with the applicable law of armed conflict)⁹⁵.

Formally demilitarized zones are protected under Geneva Convention IV⁹⁶, and Additional Protocol I⁹⁷, which prohibits parties to a conflict from extending their military operations to any zones identified as demilitarized. Zones are conferred the status of demilitarized by express agreement between the parties, which “may be concluded in peacetime, as well as after the outbreak of hostilities, and should define and describe, as precisely as possible, the limits of the demilitarized zone and, if necessary, lay down the methods of supervision.”⁹⁸

The UNEP Report highlights that the protection for demilitarized zones could be applied to enhance the protection of valuable protected areas or what it describes as “environmental hotspots”, by identifying and formally designating these regions as demilitarized zones. An advocate of such a move is the International Union for Conservation of Nature (IUCN) who have initiated a Draft Convention⁹⁹ that if adopted would designate specific “international protected areas” as demilitarized zones. Unfortunately, the Draft Convention has not received support from either the UN Security Council, nor the diplomatic support needed for adoption, perhaps as a result of resistance in relation to the right of self-defence. The Draft Convention described above suggests that the identification of internationally significant areas incorporate numerous existing international instruments including the World Heritage Convention, the Ramsar Convention¹⁰⁰, the network of Biosphere

⁹⁴ see in particular, 1907 Hague Conventions V and XIII; Geneva Convention IV, Art. 15; Additional Protocol I, Art. 60.

⁹⁵ See ICRC Guidelines for Military Manuals and Instructions on the Protection of the Environment in Times of Armed Conflict (1996), Guideline 5.

⁹⁶ Art. 15.

⁹⁷ Art. 60.

⁹⁸ Additional Protocol I, Art. 60. (2).

⁹⁹ International Union for the Conservation of Nature, *Draft Convention on The Prohibition of Hostile Military Activities in Protected Areas*, International Council of Environmental Law, IUCN, 1995.

¹⁰⁰ *Convention on Wetlands of International Importance especially as Waterfowl Habitat*. Ramsar (Iran), 2 February 1971. UN Treaty Series No. 14583. As amended by the Paris Protocol, 3 December 1982, and Regina Amendments, 28 May 1987.

Reserves¹⁰¹, and the United Nations List of Protected Areas¹⁰². IUCN has also produced a Draft Code for Transboundary Protected Areas in Times of Peace and Armed Conflict (1998). This draft code was aimed to assist in development of provisions for transboundary protected areas, and includes a section (Part V) specifically addressing measures related to military activities. The Draft Code provides a useful guideline for governments and armed forces in order to limit the impacts of armed conflict on transboundary protected areas, and in addition reiterates the IUCN call for granting demilitarized zone status to high-priority protected areas, as defined by existing instruments of international law.

Whilst the IUCN approach is holistic, the reference to so many existing instruments to categorise protected areas results in relatively broad definitions, and confers the ultimate decision in relation to designation of such protected zones largely on the Security Council. Perhaps States would be more willing to adopt a similar convention if it was specific to a single region, or more specifically a biodiversity hotspot. If adopted this could then serve as a precedent for further protected areas, much the same way the Security Council seeks to target its sanctions regimes, so to could it foreseeable target environmental protection regimes, and tailor protections to specific regions.

2.4 Customary International Humanitarian Law

Despite the absence of any specific provision for environment protection within the text of the four Geneva Conventions, there is scope for protection found within the scope of IHL, through the application of General Principles of IHL and customary rules of IHL that have been identified. These general principles and customary rules will be discussed below.

2.4.1 Applicable General Principles and Customary Rules of IHL

The International Committee of the Red Cross (“ICRC”) published a comprehensive Study on customary international humanitarian law, within which it identified three rules specifically relevant to protection of the natural environment¹⁰³. These three rules include Rule 43, Rule 44 and Rule 45, discussed in turn below.

¹⁰¹ UNESCO website (Ecological Sciences for Sustainable Development), Biosphere Reserves page, at: <http://www.unesco.org/new/en/natural-sciences/environment/ecological-sciences/biosphere-reserves/> [accessed 17 Nov 2010].

¹⁰² See in particular, World Conservation Monitoring Centre website, at: http://www.unep-wcmc.org/protected_areas/UN_list/

¹⁰³ *ICRC customary law study*, Vol. I: Rule 43, Rule 44, Rule 45.

Rule 43 notes that the General Principles of IHL on the conduct of hostilities apply to the Natural Environment, specifically:

- A. No part of the natural environment may be attacked, unless it is a military objective
- B. Destruction of any part of the natural environment is prohibited, unless required by imperative military necessity
- C. Launching an attack against a military objective which may be expected to cause incidental damage to the environment that would be excessive in relation to the concrete and direct military advantage anticipated is prohibited.

Whilst principles A and B outlined above provide the same protections for biodiversity hotspots as all other areas of “natural environment”, principle C may carry more weight in the context of a biodiversity hotspot: Incidental damage to a biodiversity hotspot, is more likely to be excessive because of the significance and acknowledged value of the 34 biodiversity hotspots. Hotspots are by definition areas that contain an exceptional concentration of endemic species, and thereby should arguably be prioritised in conservation efforts. Where species are endemic, loss of species is a permanent and irreversible event that could hold potential consequences for entire ecosystems, including human communities. In this context, any incidental damage to the environment is far more likely to be excessive in relation to the military objective because of the acknowledged value of biological diversity to the international community, and also due to the likelihood of excessive damage occurring in this context.

Rule 44 identifies a requirement for due regard for the natural environment during military operations, specifically:

Methods and means of warfare must be employed with due regard to the protection and preservation of the natural environment. In the conduct of military operations, all feasible precautions must be taken to avoid, and in any event to minimize, incidental damage to the environment. Lack of scientific certainty as to the effects on the environment of certain military operations does not absolve a party to the conflict from taking such precautions.

According to the ICRC customary law study, the customary IHL rule in relation to avoiding and minimizing any damage to civilian objects is equally applicable to the natural environment. In support of this assertion the study points to the ICRC’s own Guidelines¹⁰⁴

¹⁰⁴ Guidelines on the Protection of the Environment in Times of Armed Conflict, § 4 (*ibid.*, § 5); see also World Charter for Nature, Principle 20 (*ibid.*, § 74).

and a statement calling upon parties to a conflict “take all feasible precautions to avoid, in their military operations, all acts liable to destroy or damage water sources”¹⁰⁵. Further support is provided by way of supported by statements from military manuals and official statements indicative of State practice.¹⁰⁶ The ICJ has also confirmed that “[r]espect for the environment is one of the elements that go to assessing whether an action is in conformity with the principles of necessity and proportionality”¹⁰⁷.

For armed conflict impacting on biodiversity hotspots, any reasonable assessment of due regard for the natural environment ought to include consideration of the impact of the military operation on biodiversity within the region. Seeking to avoid and minimize incidental damage to the natural environment in the region of a biodiversity hotspot must take into account biodiversity. This is true even where there is lack of scientific certainty (for example arising from insufficient data relating to the number of species in a region, or the presumption of extinction of a species after a long period without record of any individuals or population) will not absolve parties from taking such precautions.

Rule 45 identifies a prohibition in relation to means and methods of warfare intended or expected to cause “widespread, long-term and severe damage to the natural environment”, specifically:

The use of methods or means of warfare that are intended, or may be expected, to cause widespread, long-term and severe damage to the natural environment is prohibited. Destruction of the natural environment may not be used as a weapon.

This rule is particularly relevant to biodiverse regions in conflict zones, because it touches on the scope of damage done to the environment during conflict. The ICRC customary law study identified this rule as being applicable in international armed conflicts and arguably in NIACs.¹⁰⁸ It is also an important rule because of its conclusive character: where widespread, long-term and severe damage is inflicted, or the natural environment is used as a weapon, it is not relevant to inquire into whether those acts could be justified on the basis of military necessity or whether incidental damage was excessive. This conclusive wording means that exceptions to the rule are avoided, provided that its terms are satisfied.

Methods or means of warfare that impact the biodiversity of a region are arguably

¹⁰⁵ 26th International Conference of the Red Cross and Red Crescent, Res. II (adopted by consensus)

¹⁰⁶ Citing: e.g., United States, *Naval Handbook* (*ibid.*, § 11); the statements of Argentina (*ibid.*, § 29) and Canada (*ibid.*, §§ 36 and 38); see also Report of an expert meeting on the protection of the environment in time of armed conflict (*ibid.*, § 60).

¹⁰⁷ *ICJ Nuclear Weapons Case* (1996), 242, para. 30.

¹⁰⁸ *ICRC customary law study*, Rule 45.

responsible for widespread, long-term and severe damage, since the loss of biodiversity and particularly any loss of species is an irreversible event that could have consequences for the entire ecological system, and for the local community or even conceivably humanity as a whole. It may seem far-fetched to say that the loss of a single species could have such wide reaching implications, however when taken in the context of the value of biological and genetic resources we may lose resources of value to us all.

It is unclear whether both parts of this rule are equally applicable in NIACs, as it was not included in the text of Additional Protocol II, and its customary status is inconclusive (although the *ICRC customary law study* notes that the present trend towards further protection of the environment and towards establishing rules applicable in NIACs mean that it is likely to become customary in due course, particularly in light of the fact that major damage to the environment rarely respects international frontiers, and the potential that such damage may also violate other rules equally applicable in IACs and NIACs). Despite its omission from Additional Protocol II, Rule 45 has been included in other instruments pertaining to NIACs¹⁰⁹, as well as military manuals¹¹⁰ applicable in NIACs. The *ICRC customary law study* also notes that numerous states have adopted legislation¹¹¹ criminalising “ecocide” or the wilful infliction of “widespread, long-term and severe damage to the natural environment” which apply in any armed conflict.

2.5 The Rome Statute of the International Criminal Court

Under Article 8 of the Rome Statute, causing “widespread, long-term and severe damage” to the natural environment in violation of the principle of proportionality (i.e. clearly excessive in relation to the concrete and direct overall military advantage anticipated) is established as a war crime¹¹². In addition, pursuant to the Rome Statute (Art. 13(b)) the United Nations Security Council (UNSC) may refer a situation, as opposed to an individual case, to the ICC.

¹⁰⁹ *ICRC customary law study*, Rule 45, citing: Memorandum of Understanding on the Application of IHL between Croatia and the Socialist Federal Republic of Yugoslavia, § 6 (*ibid.*, § 157); Agreement on the Application of IHL between the Parties to the Conflict in Bosnia and Herzegovina, § 2.5 (*ibid.*, § 158).

¹¹⁰ *ICRC customary law study*, Rule 45, citing: the military manuals of Australia (*ibid.*, § 164), Benin (*ibid.*, § 167), Colombia (*ibid.*, § 169), Germany (*ibid.*, §§ 171–173), Italy (*ibid.*, § 174), Kenya (*ibid.*, § 175), Republic of Korea (*ibid.*, § 301), Togo (*ibid.*, § 183) and Yugoslavia (*ibid.*, § 187).

¹¹¹ *ICRC customary law study*, Rule 45, citing: See, e.g., the legislation of Armenia (*ibid.*, § 189), Azerbaijan (*ibid.*, § 191), Belarus (*ibid.*, § 192), Bosnia and Herzegovina (*ibid.*, § 193), Colombia (*ibid.*, § 196), Croatia (*ibid.*, § 198), Kazakhstan (*ibid.*, § 204), Kyrgyzstan (*ibid.*, § 205), Republic of Moldova (*ibid.*, § 207), Slovenia (*ibid.*, § 213), Spain (*ibid.*, § 214), Tajikistan (*ibid.*, § 215), Ukraine (*ibid.*, § 217) and Yugoslavia (*ibid.*, § 220); see also the draft legislation of Argentina (*ibid.*, § 188), El Salvador (*ibid.*, § 199) and Nicaragua (*ibid.*, § 210).

¹¹² Rome Statute, Art. 8, para. 2 (b, iv).

2.6 International Jurisprudence

There is limited international jurisprudence applying or enforcing Hague Law in relation to means and methods of warfare, International Courts instead focussing on Geneva Law to protect certain categories of person, along with civilian objects.

2.6.1 International Court of Justice (ICJ)

The International Court of Justice (ICJ) has on at least three occasions¹¹³ ruled on issues specifically related to environment protection, including in the *Nuclear Weapons (Advisory Opinion)*¹¹⁴ where it advised that: “States must take environmental considerations into account when assessing what is necessary and proportionate in the pursuit of legitimate military objectives. Respect for the environment is one of the elements that go to assessing whether an action is in conformity with the principles of necessity and proportionality”¹¹⁵.

In a recent case¹¹⁶ before the ICJ the Court points out that it is “every State’s obligation not to allow knowingly its territory to be used for acts contrary to the rights of other States”¹¹⁷.

This case was connected to the construction of two Pulp Mills on the banks of the river Uruguay, where Argentina claimed that the Mills would “damage the environment of the River Uruguay and its area of influence zone”, posing a number of risks including “deterioration of biodiversity”¹¹⁸. The ICJ acknowledged the obligation of States to use all the means at their disposal in order to avoid activities within their territories or areas under their jurisdiction, that cause significant damage to the environment of another State. Further, the ICJ reaffirmed that this obligation “is now part of the corpus of international law relating to the environment”¹¹⁹.

2.6.2 The Prosecutor v Duško Tadić

In the trial of Duško Tadić¹²⁰ the International Criminal Tribunal for the former Yugoslavia (ICTY) considered a number of elements of customary IHL related to limitations on the

¹¹³ Case Concerning the Gabčíkovo-Nagymaros Project (Hungary v Slovakia) (Judgment) (1998) 37 ILM 162; and *ICJ Nuclear Weapons Case* (1996).

¹¹⁴ *ICJ Nuclear Weapons Case* (1996).

¹¹⁵ *ICJ Nuclear Weapons Case* (1996), p. 242 para. 30.

¹¹⁶ Pulp Mills on the River Uruguay (Argentina v. Uruguay)

¹¹⁷ *citing*: Corfu Channel (United Kingdom v. Albania), Merits, Judgment, I.C.J. Reports 1949, p. 22

¹¹⁸ Pulp Mills on the River Uruguay (Argentina v. Uruguay)

¹¹⁹ *citing*: *ICJ Nuclear Weapons Case* (1996), p. 242, para. 29.

¹²⁰ ICTY, *The Prosecutor v. Duško Tadić* (Jurisdiction of the Tribunal), 2 October 1995, at para. 119-127.

means and methods of warfare, or Hague Law as discussed above¹²¹. In *Tadić* the ICTY held that IHL rules governing the means and methods of warfare, including a ban on the use of chemical weapons and perfidious methods of warfare, had attained the status of customary IHL and any violation of these rules could attract criminal liability, even where violations occurred in a non-international armed conflict (NIAC). As the UNEP Report points out, this case is instructive with regard to chemical weapons, but case law in relation to IHL's treatment of environmental issues is far from comprehensive, and it remains "...unclear which provisions of IHL protecting the environment (directly or indirectly) have entered into customary law and may, therefore, be applicable to NIAC."¹²²

A NIAC is required to satisfy the definition of armed conflict (in order that they be distinguished from other less serious forms of violence); to achieve this it is generally accepted that the lower threshold described in Article 1(2) of Additional Protocol II also applies to common Article 3. Two criteria are usually used in this regard, as applied in the ICTY *Tadić* case:

1. First, the hostilities must reach a minimum level of intensity. This may be the case, for example, when the hostilities are of a collective character or when the government is obliged to use military force against the insurgents, instead of mere police forces¹²³.
2. Non-State groups involved in the conflict must be "parties to the conflict"; i.e. includes constitute an organized armed force (certain command structure and military capacity).

2.6.3 *Democratic Republic of Congo v Uganda*

The Fourth Geneva Convention¹²⁴ and the Hague Regulations of 1907 may provide indirect protection to biological resources via the prohibition against pillage, which the ICJ has previously applied in situations of pillage in relation to a natural resource. The most serious of illegal acts, and those that attract universal jurisdiction under IHL are those categorised as grave breaches pursuant to the Geneva Conventions of 1949 and its two additional protocols. Pursuant to the Fourth Geneva Convention extensive destruction and

¹²¹ See also, Greenwood (1996), p. 277.

¹²² UNEP Report (2009), p.28.

¹²³ ICTY, *The Prosecutor v. Duško Tadić* (Trial Chamber Judgment), para. 561-568; see also ICTY, *The Prosecutor v. Fatmir Limaj* (Trial Chamber Judgment), para. 84.

¹²⁴ Convention (IV) relative to the Protection of Civilian Persons in Time of War. Geneva, 12 August 1949.

appropriation of property not justified by military necessity and carried out unlawfully and wantonly constitutes a grave breach and may perpetrators may be subject to prosecution for war crimes.

In the context of biological resources inherent in biodiversity hotspots, pillage of these resources may constitute a war crime where there is no military necessity to justify the taking or plundering of the resource. Since the international community has recognised the value and property rights associated with biological resources, then it follows that wanton destruction or appropriation of those resources during armed conflict can constitute a war crime. Acts that could arguable constitute pillage might include the taking or poaching of endemic species, or the wanton destruction of their habitats without any military justification.

In its judgment of 19 December 2005, the International Court of Justice (ICJ) considered a case brought by the Democratic Republic of Congo (DRC) against Uganda. Therein, the ICJ rejected a claim by DRC that the exploitation by Uganda of its natural resources, including diamonds, constituted a violation of its permanent sovereignty over its natural resources. The ICJ recognized that the concept of permanent sovereignty over natural resources (having evolved in the context of decolonisation) continues to have legal relevance, but not in this context. The ICJ found that the principle was not applicable in the context of looting, pillage and exploitation of natural resources by members of the armed forces of an occupying power¹²⁵.

Whilst this case is not directly relevant to biodiversity, the biological resources of a given State are certainly one of its natural resources¹²⁶. Thus, an extension of the principle applied *DRC v Uganda* would also prohibit looting, pillage and exploitation by an occupying power in the context of biological resources.

2.7 Summary

It is clear from the above described sources and examples, that in spite of fact that development of IHL protections of the natural environment are only in there infancy, there are a significant number sources of law that are potentially applicable to the protection of biodiversity hotspots during armed conflict.

¹²⁵ Okowa (2007), p. 251-254; see also: International Court of Justice ‘Speech by H.E. Judge Rosalyn Higgins, President of the International Court of Justice, at the meeting of Legal Advisers of the Ministries of Foreign Affairs’ (Press Release, 23 October 2006)

¹²⁶ CBD, preamble.

3 Chapter 3: Relevant State Practice

This chapter briefly outlines some examples of relevant State practice, including application of the ENMOD Convention, consideration of a rule against “ecocide”, application of the precautionary principle to situations of armed conflict, and some selected examples from other relevant national multilateral authorities. As the UNEP Report points out, this field of IHL is somewhat complicated by the fact that “... there have been few State-by-State assessments to ascertain State practice and *opinio juris*; most assessments rely on international declarations and on isolated samples of practice.”¹²⁷ On the other hand, the ICRC customary law study identifies a number of examples of State practice to support the premise that there is an obligation to protect the natural environment, and that such obligation also applies to Non-International Armed Conflicts. Evidence cited includes: military manuals; official statements and submissions by States to the ICJ during the Nuclear Weapons case ... to the effect that the environment must be protected for the benefit of all; and that the precautionary principle in environmental law may also apply to armed conflict¹²⁸.

3.1 Convention on the Prohibition of Military or any other Hostile Use of Environmental Modification Techniques (ENMOD)

Established in response to methods employed during the Vietnam War, the Convention on the Prohibition of Military or any other Hostile Use of Environmental Modification Techniques (ENMOD) serves as an example of State practice in relation to protection of the environment during armed conflict. It is of particular relevance to Biodiversity hotspot protection, because it specifically prohibits the deliberate modification of the environment in order to inflict widespread, long-lasting or severe effects as a means of destruction, damage or injury to another State party. Okawa observes that whilst the ENMOD Convention may have been a “...milestone in the attempt to incorporate discretely environmental values in the substantive content of *jus in bello*. This convention is however pregnant with limitations.”¹²⁹

¹²⁷ UNEP Report, p. 40.

¹²⁸ ICRC customary law study,

¹²⁹ Okawa (2007), p. 248.

The first of these major limitations is the scope of its application: it not settled whether the provisions of ENMOD amount to customary international law, and thus it remains unclear whether it binds States who are not a party to it. According to the ICRC customary law study, the military manuals of Israel, South Korea and New Zealand contend that the ENMOD convention only binds parties to it (currently this includes 74 State parties¹³⁰); however the Indonesian military manual states this rule in spite of the fact that Indonesia is not a party to ENMOD.¹³¹

There is one element of the ENMOD that seems more established, since the ICRC customary law study identified that: “irrespective of whether the provisions of the ENMOD Convention are themselves customary, there is sufficiently widespread, representative and uniform practice to conclude that the destruction of the natural environment may not be used as a weapon.¹³²” This is reflected in a statement made by the United States during the second ENMOD Review Conference in 1992, where the US stated that the ENMOD Convention reflected “the international community’s consensus that the environment itself should not be used as an instrument of war”¹³³.

The second limitation of ENMOD is what appears to be a relatively restrictive definition of “environmental modification techniques”. ENMOD prohibits “any technique for changing - through the deliberate manipulation of natural processes - the dynamics, composition or structure of the Earth, including its biota, lithosphere, hydrosphere and atmosphere, or of outer space”, for military or any other hostile purposes. Thus, inadvertent or collateral damage resulting in such modification is not covered by this convention, and would need to be the requirements under another IHL source as outlined above.

Hulme argues that whilst on the one hand “...it is hard to avoid the conclusion that ENMOD belongs to an era of science fiction. On the other hand, as science fiction quickly becomes science fact in the twenty-first century, it cannot be doubted that the ENMOD Convention remains a worthwhile document.”¹³⁴ In general the ENMOD “...only applies to signatory powers”¹³⁵ it does provides some assistance in relation to the definitions of

¹³⁰ See: *State Parties to the Following International Humanitarian Law and Other Related Treaties*, ICRC website at: http://www.icrc.org/eng/resources/documents/misc/party_main_treaties.htm [accessed 7 Dec 2010].

¹³¹ ICRC customary law study, Vol. I, p. 156.

¹³² *Ibid.*

¹³³ *ICRC customary law study*, Vol. II, p. 909-910, citing: US, Statement of 15 September 1992 at the Second ENMOD Review Conference, Geneva, 14–21 September 1992.

¹³⁴ Hulme (2004), p. 73.

¹³⁵ Burger, James A., (1996), pp. 338-339.

widespread, long-term and severe. It should be noted that the damage threshold under Additional Protocol I is a cumulative standard, “widespread, long-term *and* severe”, whilst the threshold under ENMOD is the lower: widespread, long-term, *or* severe¹³⁶. The definitions provided within ENMOD were not intended to prejudice the interpretation of Additional Protocol I or any other international agreement¹³⁷; however the analysis of these terms is a useful one, as they have not been specifically defined under the Additional Protocol:

- Widespread: encompasses an area on the scale of several hundred square kilometres;
- Long-term: is for a period of months, or approximately a season¹³⁸;
- Severe: involves serious or significant disruption or harm to human life, natural economic resources or other assets.

From a biodiversity perspective, the definition of widespread is somewhat problematic because biodiversity losses may be very significant even when confined to a much smaller area; particularly in hotspots where endemic species can be very concentrated.

The ENMOD is limited in coverage since it prohibits only “manipulation”¹³⁹ of the environment, where a party deliberately undertakes to make long-lasting or permanent changes. Interestingly, ENMOD sets out a general principle that should be recognised under all circumstances: regardless of categorisation of the conflict (IAC or NIAC); or indeed ENMOD applies just as well apply to military operations in time of peace. As Burger explains, whilst ENMOD finds only very limited practical application, it denotes the fact that there are general environmental rules which apply to conflicts regardless of how they might be classified, and “...there is good reason for peacekeeping forces to observe it and other provisions relating to the environment.”¹⁴⁰

¹³⁶ Note: in addition, the ENMOD targets “deliberate manipulation” of the environment in contrast to other IHL instruments that target acts “expected or intended” to cause environmental harm.

¹³⁷ ENMOD Convention, Note included in the ‘Understanding’ section clarifies that the definitions of widespread, long-term and severe within the Convention, “... is intended exclusively for this Convention and is not intended to prejudice the interpretation of the same or similar terms if used in connexion with any other international agreement.”

¹³⁸ See also, Commentary to the 1977 Additional Protocol I, Art. 35, <http://www.icrc.org/ihl.nsf/COM/470-750044?OpenDocument>

¹³⁹ ENMOD, Art. 2.

¹⁴⁰ Burger, James A. (1996), p. 339.

3.2 Prohibition of “ecocide”

As outlined in the ICRC customary law study, “irrespective of whether the provisions of the ENMOD Convention are themselves customary, there is sufficiently widespread, representative and uniform practice to conclude that the destruction of the natural environment may not be used as a weapon.”¹⁴¹ Such a prohibition is assistive in any effort to protect biodiversity hotspots from direct attacks during armed conflict.

The ICRC customary law study cites numerous examples of State practice including significant practice prohibiting a deliberate attack on the environment as a method of warfare. Examples include legislation of several States criminalising “ecocide”¹⁴². The ICRC customary law study also states the following examples of state practice in relation to a crime of “ecocide” or prohibition on use of the environment as a method of warfare:

- Estonia’s Penal Code: prohibition on affecting the environment as a method of warfare;¹⁴³
- Yugoslavia condemned “ecocide” in connection with the NATO attack on a petrochemical plant in 1999;¹⁴⁴
- Iraq, in a letter to the UN Secretary-General in 1991, stated that it would not exploit the environment and natural resources “as a weapon”;¹⁴⁵
- Kuwait, in a letter to the UN Secretary-General the same year, stated that the environment and natural resources must not be used “as a weapon of terrorism”;¹⁴⁶
- During a debate in the Sixth Committee of the UN General Assembly in 1991, Sweden, referring to the destruction of the environment by Iraqi forces, said that this was an “unacceptable form of warfare in the future”;¹⁴⁷ and Canada stated that “the environment as such should not form the object of direct attack”¹⁴⁸
- A declaration adopted by the OECD Ministers of the Environment in 1991 condemned Iraq’s burning of oil fields and discharging of oil into the Gulf as a

¹⁴¹ ICRC customary law study, Vol. 1, p. 156.

¹⁴² *Ibid.*, Vol. 1, p. 155, citing: e.g., the legislation of Armenia (§ 189), Belarus (§ 192), Kazakhstan (§ 204), Kyrgyzstan (§ 205), Moldova (207), Russia (§ 212), Tajikistan (§ 215), Ukraine (§ 217) and Vietnam (§ 219).

¹⁴³ ICRC customary law study, Vol. 1, 156, citing: Estonia, *Penal Code (ibid., § 200)*.

¹⁴⁴ *Ibid.*, Vol. 1, p. 155, citing: Yugoslavia, Appeals and Letter of the Federal Ministry for Development, Science and the Environment (*ibid.*, § 271).

¹⁴⁵ *Ibid.*, Vol. 1, p. 155, citing: Iraq, Letter to the UN Secretary-General (*ibid.*, § 237).

¹⁴⁶ *Ibid.*, Vol. 1, p. 155, citing: Kuwait, Letter to the UN Secretary-General (*ibid.*, § 245).

¹⁴⁷ *Ibid.*, Vol. 1, p. 155, citing: Sweden, Statement before the Sixth Committee of the UN General Assembly (*ibid.*, § 48).

¹⁴⁸ *Ibid.*, Vol. 1, p. 155, citing: Canada, Statement before the Sixth Committee of the UN General Assembly (*ibid.*, § 37).

violation of international law and urged Iraq to cease resorting to environmental destruction as a weapon.¹⁴⁹

3.3 The 'precautionary principle': application during armed conflict?

Part of the corpus of international environmental law, the precautionary principle directs States to manage environmental risks: "Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation."¹⁵⁰ The precautionary measures necessarily include an assessment of potential impacts on the environment during the planning of an attack. Without considering the general applicability of environmental treaties to situations of armed conflict, this principle is worth exploring because it seems to have relatively broad recognition and acceptance as a general principle of international law, for example the ICRC customary law study¹⁵¹ concludes that State practice exists to the effect that a lack of scientific certainty as to the effects on the environment of certain military operations will not absolve parties to a conflict from taking proper precautionary measures to prevent undue damage.

The ICRC customary law study¹⁵² identifies a number of examples of State practice indicating that the precautionary principle continues to apply in situations of armed conflict:

- In its advisory opinion in the *Nuclear Weapons case*, the ICJ stated that the basic principles it recognized in the *Nuclear Tests case (Request for an Examination of the Situation)* of 1995 would also apply to the actual use of nuclear weapons in armed conflict¹⁵³. This would include, inter alia, the precautionary principle, which was central to the arguments in the latter case¹⁵⁴.
- The ICRC, in its report submitted in 1993 to the UN General Assembly on the protection of the environment in time of armed conflict, referred to the precautionary

¹⁴⁹ *Ibid.*, Vol. 1, p. 155, citing: OECD, Declaration of the Ministers of Environment (*ibid.*, § 278).

¹⁵⁰ Rio Declaration on Environment and Development, Principle 15, UN Doc: A/CONF.151/26 (Vol. I), at: <http://www.un.org/documents/ga/conf151/aconf15126-1annex1.htm> [accessed 1 Dec 2010].

¹⁵¹ ICRC customary law study, Vol. I, p. 150.

¹⁵² Rule 44, commentary.

¹⁵³ *ICJ, Nuclear Weapons Case* (1996), at 32.

¹⁵⁴ ICRC customary law study, Rule 44, citing: *ICJ, Nuclear Tests case (Request for an Examination of the Situation)*, Order (cited in Vol. II, Ch. 14, § 139). "New Zealand argued that the precautionary principle was a binding rule (*ibid.*, § 132). Although France stated that it was uncertain whether the precautionary principle had become a binding rule of international law, it nevertheless stated that it did in practice carry out precautions that were in keeping with its obligations under international environmental law (*ibid.*, § 131). The ICJ concluded that both France and New Zealand had, in their submissions, reaffirmed their commitment to respect their obligations to respect and protect the natural environment (*ibid.*, § 139)".

principle as “an emerging, but generally recognized principle of international law [whose object it is] to anticipate and prevent damage to the environment and to ensure that, where there are threats of serious or irreversible damage, lack of scientific certainty shall not be used as a reason to postpone any measures to prevent such damage”¹⁵⁵. This assertion was not contested by any State¹⁵⁶.

- A recent development will result in the establishment of an international monitoring body to curb destruction of biodiversity: The Intergovernmental Science Policy Platform on Biodiversity and Ecosystem Services (IPBES). As a result States may be adhere to new requirements and measures to protection biodiversity¹⁵⁷.

3.4 Other Examples of relevant state practice from military manuals and other domestic sources

In 1992 the United Nations General Assembly adopted the ICRC’s “Guidelines for Military Manuals and Instructions on Protection of the Environment in Times of Armed Conflict”, and therein urged all Member States to take steps to incorporate provisions of international law applicable to protection of the natural environment into their military manuals and ensure that they be effectively disseminated¹⁵⁸.

As the examples below will illustrate, to a large extent Member States have taken steps to incorporate protection of the natural environment into their military manuals. What is in some senses missing, is proper consideration of military impacts on biodiversity. The following selection of examples of state practice found in various military manuals are intended to support the above arguments.

3.4.1 Individual States

A number of elements discussed above are reiterated documents issued by a number of States, a selection of these is provided as examples below:

- The United States Army

¹⁵⁵ ICRC, Report on the protection of the environment in time of armed conflict (*ibid.*, § 143).

¹⁵⁶ ICRC customary law study, Vol. I, p. 150.

¹⁵⁷ The establishment of the new body was agreed to by governments meeting in Busan, South Korea, and has to be approved by the UN General Assembly’s 65th session, which opened in September, and then presented for endorsement by environment. Ministers attending the UNEP Governing Council/Global Ministerial scheduled to be held in February 2011, in Nairobi, Kenya. [Related item: *New Mechanisms for Enforcing Biosafety and Biological Diversity Treaties* in May 2008, available at <http://www.ipbes.net/index.php> [accessed 8 Dec 2010].

¹⁵⁸ United Nations General Assembly Resolution on Protection of the environment in times of armed conflict, UN Doc: A/RES/47/37

A report prepared for the United States Army (Environmental Policy Institute) observed that the US Army has had intensive involvement in stabilization and reconstruction after environmental damage. The report noted that this practice "...is arguably one of the most compelling reasons for commanders to focus on environmental issues during planning and operations". As the report maintains "...success in this phase is key to the overall success of the mission."

Arguably successful conservation of biodiversity hotspots also relies on successful planning of operations, because loss of species is often irreversible, so reconstruction efforts after damage in this regard may be a case of 'too little, too late'.

- The Australia's Defence Force

The Australia's Defence Force Manual (1994), discusses and reiterates, that there is a duty of care in relation to planning and conduct of military operations to ensure the natural environment is protected: "Those responsible for planning and conducting military operations have a duty to ensure that the natural environment is protected."¹⁵⁹ The second requirement discussed in the manual is a requirement to not make the natural environment the subject of an attack, unless justified by military necessity:

The natural environment is not a legitimate object of attack. Destruction of the environment, not justified by military necessity, is punishable as a violation of international law . . . The general prohibition on destroying civilian objects, unless justified by military necessity, also protects the environment.¹⁶⁰

- Belgium Defence Policy

Belgium's Regulations on the Tactical Use of Large Units, restricts the use of weapons can result from the obligation to respect the laws of war, including means and methods of warfare, the protection of the civilian population, civilian objects and the environment."¹⁶¹

- Italian Military Manual

Italy's IHL Manual defines "attacks against the natural environment" as war crimes.¹⁶²

¹⁵⁹ ICRC customary law study, Vol. II, p. 861, citing: Australia, *Defence Force Manual* (1994), § 545.

¹⁶⁰ ICRC customary law study, Vol. II, p. 846, citing: Australia, *Defence Force Manual* (1994), § 545(a) and (c).

¹⁶¹ ICRC customary law study, Vol. II, p. 846, citing: Belgium, *Regulations on the Tactical Use of Large Units* (1994), Article 208(c)(2).

¹⁶² ICRC customary law study, Vol. II, p. 846, citing: Italy, *IHL Manual* (1991), Vol. I, § 85.

- The Republic of Korea Military Manual

The Republic of Korea's Operational Law Manual (1996) specifically prohibits the use of weapons damaging the natural environment.¹⁶³

3.4.2 North Atlantic Treaty Organisation (NATO)

One of the earliest international organisations to incorporate protection for the natural environment into military policy and planning was the North Atlantic Treaty Organisation¹⁶⁴ who established a related committee in 1969¹⁶⁵. The latest restatement of the NATO commitment to tackling environmental concerns can be found in the recently released 2010 Strategic Concept of the North Atlantic Treaty Organisation (NATO) the Alliance affirms a commitment to broad based security, including “[k]ey environmental and resource constraints, including health risks, climate change, water scarcity and increasing energy needs” as areas of concern to NATO that have potential impacts on planning and operations.”¹⁶⁶

As Gasser explains, “[f]ull respect for environmental concerns in armed conflict demands careful preparation and training of persons whose task it is to plan, decide or execute military operations, both in peacetime and in war.”¹⁶⁷ To assist with such training, in 1992 the United Nations General Assembly adopted the ICRC's “Guidelines for Military Manuals and Instructions on Protection of the Environment in Times of Armed Conflict”, and thereby urged all Member States to take steps to incorporate provisions of international law applicable to protection of the natural environment into their military manuals and ensure that they be effectively disseminated¹⁶⁸.

Numerous States have expressed the view that military commanders and others responsible for planning, deciding upon or executing attacks necessarily have to reach decisions on the basis of their assessment of the information from all sources which is available to them at the relevant time. At the same time, many military manuals stress that the commander must obtain the best possible intelligence, including information on concentrations of civilian persons, important civilian objects, specifically protected objects, the natural

¹⁶³ ICRC customary law study, Vol. II, p. 846, citing: Republic of Korea, *Operational Law Manual*, 1996, p. 129.

¹⁶⁴ hereinafter cited as: “NATO”

¹⁶⁵ NATO website, at: http://www.nato.int/science/about_sps/historical.htm [accessed 17 Dec 2010].

¹⁶⁶ NATO Strategic Concept, 2010, at: <http://www.nato.int/lisbon2010/strategic-concept-2010-eng.pdf> [accessed 17 Dec 2010].

¹⁶⁷ Gasser, Hans-Peter (1996), p. 526.

¹⁶⁸ United Nations General Assembly Resolution on Protection of the environment in times of armed conflict, UN Doc: A/RES/47/37

environment and the civilian environment of military objectives.¹⁶⁹

3.5 Summary

To summarise, the observations above indicate that whilst the ENMOD Convention is of relevance to biodiversity protection, it is limited in scope (owing to the number of State parties, and ambiguity over whether its provisions amount to customary international law). Regardless of its customary status, it does however seem clear that there sufficiently wide practice to conclude in a rule against ecocide, that is a prohibition on use of the natural environment as a weapon.¹⁷⁰ The selected examples from relevant national authorities and NATO discussed above seem to indicate at least an emerging expectation that military commanders and others responsible for planning military operations should obtain the best possible intelligence, including information on the natural environment.¹⁷¹ Extension of this practice inline with the *ICRC Guidelines for Military Manuals* will hopefully have benefits for biodiversity generally, although inclusion of a special consideration in relation to biodiversity hotspots would arguably go a long way to preserving biodiversity from the threats posed by armed conflict.

¹⁶⁹ ICRC customary law study, *citing*: See, e.g., the military manuals of Australia (cited in Vol. II, Ch. 5, § 185), Benin (*ibid.*, § 186), Croatia (*ibid.*, § 188), France (*ibid.*, § 190), Italy (*ibid.*, § 191), Madagascar (*ibid.*, § 192), Nigeria (*ibid.*, § 194), Spain (*ibid.*, § 195), Sweden (*ibid.*, § 196) and Togo (*ibid.*, § 197).

¹⁷⁰ ICRC customary law study, p. 156.

¹⁷¹ ICRC customary law study, *citing*: See, e.g., the military manuals of Australia (cited in Vol. II, Ch. 5, § 185), Benin (*ibid.*, § 186), Croatia (*ibid.*, § 188), France (*ibid.*, § 190), Italy (*ibid.*, § 191), Madagascar (*ibid.*, § 192), Nigeria (*ibid.*, § 194), Spain (*ibid.*, § 195), Sweden (*ibid.*, § 196) and Togo (*ibid.*, § 197).

4 Chapter 4: Effectiveness of protection

To ascertain the effectiveness of IHL protections as they currently are, or as they could be applied, it is necessary to consider them in the context of real conflict scenarios. Below a number of case examples have been identified, all of which have some consequences for the natural environment or biodiversity hotspots specifically. Each case example includes a brief analysis that seeks to identify:

- (a) what type of conflict is being considered;
- (b) the applicable IHL in light of the classification; and
- (c) any observations in relation to applicable legal infrastructure available, including where applicable, shortcomings observed, likelihood of enforcement, and any relevant additions or alternative options that have been or could be employed to protect biodiversity in the region.

The above analysis will be kept brief so as to provide commentary for a range of case examples within the given word constraints.

For an indication of the geographical locations of the biodiversity hotspots referred to below, please refer to “Annex A” for a map of global biodiversity hotspot locations.

4.1 Case Example: Peru - Ecuador Border Skirmishes

The common border between Peru and Ecuador has been the source of conflict for over the past 150 years, most recently in January 1995. This border region lies partly within the Tropical Andes hotspot, which is one of the richest and most diverse botanical regions on earth, containing an incredible 1/6 of all plant species in less than 1% of global land area¹⁷². If we take the more recent conflict between Peru and Ecuador (e.g. January 1995, as outlined above) then the conflict is international in character as it involves two of the High Contracting Parties to the Geneva Conventions¹⁷³ and in general the definition of an international armed conflict (IAC) is normally satisfied when there is a resort to armed

¹⁷² Mittermeier ... [et al.] (2004).

¹⁷³ Both Peru and Ecuador had ratified the Geneva Conventions and both Additional Protocols prior to 1995, ICRC, see: *State Parties to the Following International Humanitarian Law and Other Related Treaties*, ICRC website at: http://www.icrc.org/eng/resources/documents/misc/party_main_treaties.htm [accessed 7 Dec 2010].

force between two States, and reports in the New York Times¹⁷⁴ from the period indicate that there was certainly a localized, albeit undeclared war in early 1995.

In light of the classification as an IAC, all of the applicable IHL rules in relation protection of the natural environment are applicable.

4.1.1 Analysis

The practical realities of a cross border disputes such as this mean military necessity may undermine efforts to protect biodiversity that are (or could be) applicable during peacetime. There is little data available in relation to impact of the conflict itself, although ongoing border disputes over a 150-year period are bound to have had some impact. Since that time, Peru and Ecuador have implemented a novel approach to protecting this region, adopting a bilateral treaty (the *Acta Presidencial de Brasilia*, signed in 1998). This agreement was unique in that not only did it resolving the border conflicts between the two countries, but it also recognized the potential for fostering transboundary cooperation and reducing tension between the countries while protecting biodiversity conservation. In particular, the treaty called for Peru and Ecuador to establish Adjacent Zones of Ecological Protection on both sides of the border in the Cordillera del Cóndor in the interest of promoting biodiversity conservation.

4.2 Case Example: Korean Demilitarized Zone

Established in the Armistice Agreement¹⁷⁵ following the Korean War, the Korean Demilitarized Zone¹⁷⁶ is afforded special protection under IHL, specifically Article 60 of Additional Protocol I, which provides that zones such as this normally prohibit all acts of hostility and prohibit all activity linked to the military effort of both parties¹⁷⁷.

Demilitarized zones can be beneficial for biodiversity, at least temporarily: McNeely (2003) identifies the demilitarized zone (DMZ) on the Korea Peninsula, 4km wide and stretching 240km across the Peninsula; plus an additional strip of land maintained by South Korea, where access is very restricted (the additional area is a total of 1,529km²). This cross-section of Korean biodiversity provides a sanctuary for a very wide diversity of species that are in many cases rare elsewhere.

¹⁷⁴ Brooke, James. *Peru and Ecuador Sign Truce In Effort to Halt Border War*. In: New York Times. 2 March 1995.

¹⁷⁵ *Korean Armistice Agreement* (Panmunjom, Korea) July 27, 1953, see in particular: Art. 1, Military Demarcation Line and Demilitarized Zone.

¹⁷⁶ Hereinafter “DMZ”.

¹⁷⁷ Additional Protocol I, Art. 60(3); reflected in: *Korean Armistice Agreement*. 1953, Art. 1(6).

This Case Example highlights the complexity of this issue: here we have an entirely unintended benefit to biodiversity via a mechanism established for a different purpose. Indirect benefits to biodiversity through established IHL is at present a very important protection.

4.2.1 Analysis

To build upon the unintended benefits to biodiversity that the demilitarized zone currently enjoys, an appropriate mechanism to ensure continue benefit to biodiversity in the region would be to implement an agreement similar to the *Acta Presidencial de Brasilia* between Peru and Ecuador. Such a mechanism not only benefits biodiversity, but the community in general benefits, and there may be positive implications for sustainable peacebuilding.

4.3 Case Example: Mountain Gorilla Reserves (Rwanda & D.R. Congo)

This case example relates to armed conflicts within the Eastern Afromontane hotspot, most notably the 1994 Rwandan genocide and civil war in neighbouring Congo. Judicial determination has categorised these conflicts as largely classified these conflicts as NIACs, however in the context of the Democratic Republic of the Congo (hereinafter “DRC”) there has been an International Criminal Court¹⁷⁸ classification of this conflict as an IAC, based on the fact that the ICC found there were “...substantial grounds to believe that Uganda directly intervened in this armed conflict through the *Ugandan People Armed Forces* (“the UPDF”).”¹⁷⁹ As a result, the ICC found that there were also “...substantial grounds to believe that the conflict that took place in Ituri District between, at least, August 2002 and May 2003, was of an international character.”¹⁸⁰ Accordingly, protection of the natural environment under IHL will largely be in the context of NIAC, except to the extent that the geographical location and timing under consideration coincide with the IAC involving Uganda. As a result, under Additional Protocol I is not always applicable. As outlined in discussions above, it is possible to find indirect legal protections for the biological resources in this region through a dynamic interpretation of the Fourth Geneva Convention¹⁸¹ and the Hague Regulations of 1907 which prohibit pillage, as discussed above.

¹⁷⁸ Hereinafter, “ICC”.

¹⁷⁹ ICC, *Katanga Case*, at para. 240.

¹⁸⁰ *Ibid.*

¹⁸¹ Convention (IV) relative to the Protection of Civilian Persons in Time of War. Geneva, 12 August 1949.

According to the Hanson ... [et al.] study, there are four protected areas within the Eastern Afromontane hotspot. In Volcanoes National Park and in Nyungwe Forest Reserve, two of the protected areas in Rwanda (protected in this instance meaning under National Parks legislation, not under IHL) international NGO support for local staff was able to continue right throughout the civil war, genocide and the volatile post-war period. The involvement of NGOs during the post-war period assisted the parks with reinitiating tourism and research, and prevented proposed road-building and cattle-ranching projects¹⁸². As a result, remarkably the population of critically endangered mountain gorillas (*Gorilla beringei beringei*) in Volcanoes National Park actually increased during the course of the conflict¹⁸³. By contrast, in two of Rwanda's smaller and less known forest reserves: Gishwati and Makura there was little or no international NGO support during the 1990s¹⁸⁴. In 2000 Gishwati had been almost completely deforested, whilst Makura was reduced to less than half its historical extent, and its populations of endemic birds are no longer thought to be viable¹⁸⁵.

The situation is similar in DR Congo, where the staff has received NGO support and remained a small population of the rare Grauer's gorilla (*Gorilla beringei graueri*) persists in the highland sector¹⁸⁶. Elsewhere in DR Congo continuing conflict has prevented thorough biological surveys, but initial reports from Kahuzi-Biega National Park suggest a similar pattern, with areas outside the park being subject to rebel-controlled mining operations, logging, settlements, encroachment, and widespread poaching, the combined impact has devastated the park's natural resources, with steep declines in larger animals including elephants and gorillas, indicating that these species are likely to be at risk¹⁸⁷.

4.3.1 Analysis

From the above scenarios it seems apparent that conservation efforts within the Eastern Afromontane hotspot have benefited a great deal in areas where continued support from

¹⁸² Hanson ... [et al.] (2009), p. 585, citing: Plumptre, A. J., Masozera, M., and Vedder, A., (2001). *Effect of civil war on the conservation of protected areas in Rwanda*. Biodiversity Support Program, Washington.

¹⁸³ Hanson ... [et al.] (2009), p. 585, citing: Weber, B., *The population is up*. In: Wildlife Conservation, Vol. 107 (2004), p. 8.

¹⁸⁴ Hanson ... [et al.] (2009), p. 585, citing: Plumptre, A. J., Masozera, M., and Vedder, A., (2001). *Effect of civil war on the conservation of protected areas in Rwanda*. Biodiversity Support Program, Washington.

¹⁸⁵ *Ibid*.

¹⁸⁶ Hanson ... [et al.] (2009), p. 585, citing: Hart, J., and I. Liengola. 2005. Post-conflict inventory of Kahuzi-Biega National Park. In: *Gorilla Journal* 30:3–5.

¹⁸⁷ Hanson ... [et al.] (2009), p. 585, citing: Redmond, I. (2001) Coltan boom, gorilla bust: the impact of coltan mining on gorillas and other wildlife in eastern DR Congo. In: Report for The Dian Fossey Fund International, Atlanta, and The Born Free Foundation, Horsham, Rhode Island.

international NGOs has occurred. It is vital to note that provision of existing (or additional) IHL protections for biodiversity hotspots, will be meaningless unless such regions receive the support required to continue conservation efforts during periods of armed conflict. Again, building on the premises of Adjacent Zones of Ecological Protection on both sides of the border between Peru and Ecuador, there have been similar initiatives to establish such parks in Africa, most notably the Peace Parks initiative, which has established a number of reserves on the African continent, although none in the biodiversity hotspots currently being discussed. The Peace Parks Foundation recalls the reality that “... the Berlin Treaty of 1884 dealt African territories like a pack of cards. National boundaries then proclaimed cut across tribal and clan groupings as well as wildlife migration routes, fragmenting eco-systems and threatening biodiversity.” And the organisation seeks to establish ‘Peace Parks’ “...to correct these past injustices and ensure that a high level of biodiversity is maintained through the joint management of these resources.”¹⁸⁸

4.4 Case Example: The Borjomi Forests (Georgia)

The 2008 conflict between Russia and Georgia lasted only a few days, however it involved two parties to the Geneva Conventions, both of whom had previously ratified Additional Protocol I.¹⁸⁹ As outlined above, although the conflict was short, an armed conflict exists whenever there is a resort to armed force between States, so this situation can be categorised as IAC¹⁹⁰ and similar to the case discussed above¹⁹¹, all of the applicable IHL rules in relation protection of the natural environment are applicable.

The Borjomi-Kharagauli National Park is a protected area in Georgia, and makes up part of the Caucasus biodiversity hotspot, which for a temperate region displays exceptional species diversity and endemism.¹⁹² McNeely explains, “[o]n August 15, 2008, Russian military helicopters reportedly dropped incendiary munitions on the Borjomi forests as part of a retaliatory campaign, starting fires that burned for weeks and ravaged nearly 2,500

¹⁸⁸ See Peace Parks Foundation website, <http://www.peaceparks.org/Home.htm>

¹⁸⁹ See: *State Parties to the Following International Humanitarian Law and Other Related Treaties*, ICRC website at: http://www.icrc.org/eng/resources/documents/misc/party_main_treaties.htm [accessed 7 Dec 2010].

¹⁹⁰ *The Prosecutor v. Duško Tadić* (Appeals Chamber Decision), ICTY, at para 70.

¹⁹¹ See: 4.1 Case Example: Peru - Ecuador Border Skirmishes

¹⁹² *Hotspots revisited* (2004), p. 148. NOTE: the hotspot boasts some 1600 endemic vascular plant species; 18 endemic mammal species (including the only long-clawed mole-vole which is the only remaining representative of an endemic genus); two endemic bird species; 20 endemic reptile species; 4 endemic amphibian species; 12 endemic fish species and a diversity of invertebrates and insects.

acres (1,000ha).”¹⁹³ Further, McNeely argues that “[w]arfare such as this and in all its forms causes destruction to both human societies and biodiversity. While ecological damage cannot be compared with the human costs of war, the fact that nature also suffers from the follies of violent conflict is a situation worthy of greater attention.”¹⁹⁴

4.4.1 Analysis

Armed conflict often damages government conservation efforts, and in developing countries money from nature tourism can be vitally important to conservation funding. In both cases, during armed conflict both of these sources of funding will be impacted, if not completely absent. Thus, for biodiversity conservation to continue during a period of conflict, conservation areas benefit from the continued support of international NGOs as the above example illustrates.

4.5 Case Example: The Guinean Forests of West Africa (Liberia)

The war (specifically periods from December 1989 to 1996 and again from 1999 to August 2003¹⁹⁵) in Liberia is characterised as a civil war, or non-international armed conflict (NIAC)¹⁹⁶. Thus, direct protection for the natural environment (largely provided under Additional Protocol I) is not applicable to this conflict. That said, indirect protections for biological resources may be found through a dynamic interpretation of the Fourth Geneva Convention¹⁹⁷ and the Hague Regulations of 1907 which prohibit pillage, as discussed above. The likelihood of enforcement in relation to acts of pillage alone seems unlikely given the scale of crimes perpetrated during this conflict¹⁹⁸ however, the Truth and Reconciliation Commission¹⁹⁹ of Liberia did recommend further investigation of “economic crimes” associated with the conflict, of which the destruction of biological resources may be associated.

Liberia is one of the countries home to the transnational Guinean Forests of West Africa hotspot. This Case Example again highlights the positive impact that can be made through the continued presence of the international conservation community during periods of armed conflict. The TRC of Liberia determined that there was “...illegal exploitation of

¹⁹³ McNeely (2010), p. 63.

¹⁹⁴ McNeely (2010), p. 63.

¹⁹⁵ TRC Liberia Report, Vol. 1, p. 4.

¹⁹⁶ *Ibid*, Vol. 1, p. 19.

¹⁹⁷ Convention (IV) relative to the Protection of Civilian Persons in Time of War. Geneva, 12 August 1949.

¹⁹⁸ As outlined in the TRC Liberia Report.

¹⁹⁹ Hereinafter cited as: “TRC”

natural resources resulted in the destruction of Liberia's natural habitat, including forest degradation and the destruction of natural fauna thereby depriving the country and its citizens of their economic rights..."²⁰⁰ Indirect impacts of Liberia's civil war also "...forced rural people to hunt duikers (*Cephalophus* spp.), pygmy hippos *Choeropsis liberiensis*, elephants, and chimpanzees *Pan troglodytes* for food"²⁰¹ Despite the conditions and length of the civil war, at least two international conservation organizations²⁰² continued to operate in Liberia, even during some of the worst periods of instability and violence²⁰³.

4.5.1 Analysis

In 2003 these organisations achieved some conservation returns for their effort: an internationally mandated response, and national legislation adopted were both adopted: Domestically the Liberian Senate enacted legislation expanding the country's protected areas network, and setting the stage to make forest policy reform and conservation during Liberia's reconstruction. On the international front, The United Nations Mission in Liberia (UNMIL) has an Environment and Natural Resources Unit, which continues to carry out activities in line with Security Council Resolution 1509, which mandated UNMIL "to assist the transitional government in restoring proper administration of natural resources."

4.6 Summary

The above case examples clearly highlight that in all cases there is IHL at least potentially applicable. However, to really guarantee the effectiveness of legal protections for biodiversity hotspots, as the case examples indicate: dynamic interpretation of the more general rules and principles is required, particularly where there is no specific protection for the natural environment (i.e. under Additional Protocol I). Given the prevalence of NIACs along with their direct and indirect impacts on the natural environment, the above situations highlight the need for dynamic interpretation of existing IHL rules. These examples also make it clear that practical measures, through treaties²⁰⁴ and demilitarized

²⁰⁰ TRC Liberia Report, Vol. 2, p. 323.

²⁰¹ McNeely (2003), p. 146, citing: Wolkomir & Wolkomir (1992).

²⁰² Organisations identified were Fauna and Flora International and Conservation International, *Hotspots revisited* (2004), p. 26.

²⁰³ *Hotspots revisited* (2004), p. 26.

²⁰⁴ See: 4.1 - Case Example: Peru - Ecuador Border Skirmishes

zones²⁰⁵ are a vital component of biodiversity conservation during periods of armed conflict.

²⁰⁵ See: 4.2 - Case Example: Korean Demilitarized Zone

5 Chapter 5: Conclusions

IHL protections for the natural environment remain in their infancy, however as outlined above, there are a significant number of IHL sources potentially applicable to the protection of biodiversity hotspots during armed conflict, including specific protections for the natural environment under Additional Protocol I and, to a lesser extent, the ENMOD Convention. There are also a host of more general protections that are broad enough so as to allow an interpretation of benefit to biodiversity hotspots. In addition, as illustrated by the case examples, there are novel legal and practical measures such as sustaining efforts of international conservation organisations during periods of armed conflict, and specific bilateral treaty arrangements²⁰⁶ that can be utilised in the interest of biodiversity hotspot protection during periods of armed conflict.

One of the major challenges in this fledgling field of IHL is a lack of specificity in the applicable body of law that can leave the sources of law susceptible to diluted interpretation. Assessment of environmental damage in military operations lacks coherence²⁰⁷ and biological diversity assessment is not specifically tackled by any of IHL instruments considered herein. Fleck notes that environment “...became a key word for the survival of mankind. This alone is a good reason for a dynamic interpretation of conventional rules.”²⁰⁸ Arguably, since Fleck made that statement back in 1996; the global commitment to biodiversity protection crystallised, and thus it follows a dynamic interpretation would now incorporate biodiversity considerations as a vital component of assessing protection of and damage to the natural environment as provided for under IHL.

The “natural environment” is a very broad concept; with a multitude of possible interpretations. As a definition it fails to give any indication of which areas deserve conservation priority. Therein lies the major obstacle: when military commanders seek to mitigate collateral damage of their operations, without a valid way to prioritise the vast array of components of “the natural environment” they risk a situation where the most valuable aspect may degraded or destroyed in favour of other areas of minimal

²⁰⁶ As discussed above in relation to: 4.1 - Case Example: Peru - Ecuador Border Skirmishes.

²⁰⁷ Fleck (1996), p. 533.

²⁰⁸ *Ibid*, p. 529.

significance. It is simply not possible to conserve the natural environment in its totality, especially not during periods of armed conflict. It follows then, that it is highly desirable to conserve the most valuable and most threatened areas, as a matter of priority, and biodiversity hotspots provide a valuable assessment tool for prioritisation purposes.

Like the challenges of ensuring protection and assistance for the victims of armed conflict; ensuring protection for the natural environment and biodiversity hotspots will require sustained respect for IHL and the resources and support of States to implement and enforce it. Unless this can be achieved, these or any additional legal protections that improve the specificity of legal instruments will do precious little to protect and conserve the unique and threatened biodiverse regions of the world.

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Annex A: Map of biodiversity hotspots

